

# Does late commencement of induction of labour alter mode of delivery? A retrospective cohort study in a regional Victorian obstetric unit.



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## Introduction

Induction of labour (IOL) is an increasingly common obstetric intervention. Evidence suggests no increase in the rate of caesarean section associated with IOL however this data is drawn from large units with 24-hour theatre and dedicated night-shift staff<sup>1</sup>. Obstetric decision making may be influenced by intrapartum progress, but also the broader implications for safety and staffing. Particularly in smaller obstetric units, after hours delivery may reduce safety due to lower staffing levels and have implications for provision of care the following day when on-call staff are utilised to facilitate operative after-hours delivery.

## Objectives

We aimed to assess the relationship between late commencement of IOL and caesarean delivery (CD) in our regional Victorian obstetric unit, particularly whether late commencement of IOL increased the rate of CD.

## Methods

We performed a retrospective cohort study of induced labours from 1st January 2019 – 1st January 2020 at West Gippsland Healthcare Group. Patients were identified through the Birthing Outcomes System with physical histories then reviewed by the lead author. Women with multiple pregnancies, prior caesarean section or fetal death in utero were excluded from analysis. Data were collected on the use of cervical ripening, duration of labour, and time and mode of delivery. Estimated blood loss and position of the fetus at time of delivery were also recorded. Ethics approval was granted by the Latrobe Regional Hospital HREC (Approval no: 2021-06QA) Statistical analysis was undertaken using Excel™ and MedCalc™ statistical software.

Figure 1. Baseline Characteristics

Characteristic	Early IOL	Late IOL	P Value
Multiparous	47.1% (120/255)	63.9% (53/83)	<0.0001
Ripening required	72.5% (185/255)	41.0% (34/83)	<0.0001
Gestation	38+5/40	39+1/40	0.082
Birth Weight	3349g	3404g	0.379
OP position	16.1% (41/255)	14.5% (12/83)	0.725

## Results

902 women delivered during the study period. Of these 422 (46%) were induced. 84 women (20%) laboured either off their cervical ripening or ARM alone with the remaining 338 women requiring oxytocin. The mean time for commencement of oxytocin was 9:10am. 73 of 496 (18.5%) women delivered via caesarean section including 58 women who required oxytocin. Late commencement of IOL was defined as oxytocin commencement after 10am. It was not associated with a significantly increased risk of CD (17.5% vs 15.5%, relative risk 1.13, P = 0.629) but was associated with a later delivery time (mean 16:13 vs 14:46) and after-hours delivery (relative risk 1.87). Induced women who commenced their oxytocin after 10am were significantly more likely to be multiparous and to have not required cervical ripening. There was no difference in gestation, birth weight or OP fetal position at time of birth. A non-significant trend towards increased assisted vaginal delivery was noted in the early IOL group (RR 1.35, P 0.28), likely due to the increased proportion of primiparous women.

Figure 2. Mode of Delivery

Mode of delivery	Early IOL	Late IOL	P Value
NVD	61.2% (156/255)	68.5% (57/83)	0.195
Assisted vaginal	21.2% (54/255)	15.5% (13/83)	0.285
All vaginal	82.4% (210/255)	84.3% (70/83)	0.668
Caesarean	17.5% (45/255)	15.5% (13/83)	0.629

## Discussion and Conclusion

Our findings suggest that late commencement of IOL does not increase the likelihood of caesarean delivery, but that patient factors are likely considered when deciding on which patients to delay i.e. parity, cervical favourability. Late commencement of IOL was still associated with an increased risk of after-hours delivery and thus should be minimised where safely possible. Smaller units without a 24 hour on-site staffed operating theatre are likely to be particularly impacted by after hours delivery and workforce planning should take this into account.

### References

1. Grobman WA et al for the Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. Labor Induction versus Expectant Management in Low-Risk Nulliparous Women. *New Eng J Med* 2018; 379:513-523

